

L15 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2003 ACS on STN  
 AN 2000:874973 HCAPLUS  
 DN 134:273389  
 TI Photodeposition of tantalum pentoxide film using 222 nm excimer lamps  
 AU Zhang, J.-Y.; Hopp, B.; Geretovszky, Z.; Boyd, I. W.  
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 SO Applied Surface Science (2000), 168(1-4), 307-311  
 CODEN: ASUSEE; ISSN: 0169-4332  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 73  
 AB The authors report the growth of thin tantalum pentoxide films on Si (1 0  
 0) and quartz by photoinduced chem. vapor deposition (photo-CVD) using a  
 222 nm excimer lamp. The properties of the films formed have been studied  
 using ellipsometry, UV spectrophotometry, Fourier transform IR  
 spectroscopy (FTIR) and at. force microscopy (AFM). It was found that the  
 films can be deposited at substrate temps. as low as 25.degree.. The  
 kinetic study of the reaction processing indicated that at low deposition  
 temps. between 25 and 100.degree., the deposition process is a  
 condensation-controlled mechanism while at high deposition temps. between  
 100 and 400.degree. a reaction-controlled mechanism is dominant during the  
 growth with an activation energy of 0.08 eV, which is much lower than that  
 of 2.2 eV for thermal-CVD processing. The influence of the deposition  
 temp. on the film properties and its optimization are discussed. At  
 temps. >100.degree. the film thickness increased with temp. while it  
 decreased as the temp. is <100.degree.. The refractive index and the  
 optical band-gap of the films were around 2.09.+-.0.05 and 4.10.+-.0.05  
 eV, resp., while an optical transmittance between 85 and 98% in the  
 visible region of the spectrum was obtained at different thicknesses.  
 IT 1314-61-0P, Tantalum pentoxide  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN  
 (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (growth and properties of tantalum pentoxide film on Si and quartz by  
 photoinduced chem. vapor deposition)  
 RN 1314-61-0 HCAPLUS  
 CN Tantalum oxide (Ta2O5) (8CI, 9CI) (CA INDEX NAME)  
 \*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*  
 IT 172901-22-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (precursor; growth and properties of tantalum pentoxide film on Si and  
 quartz by photoinduced chem. vapor deposition)  
 RN 172901-22-3 HCAPLUS  
 CN Tantalum, [2-(dimethylamino-.kappa.N)ethanolato-.kappa.O]tetraethoxy-,  
 (OC-6-23)- (9CI) (CA INDEX NAME)

